

FIND		FORMULA
Force (F) pressure x area		$F = P \times A$
Compression Ration (CR)		$\frac{\text{PSI (operating pressure)} + 14.7}{14.7}$
Cylinder Air Consumption (CFM)		$\frac{\text{Volume of Cylinder} \times \text{Cycle Rate}}{1728}$
Standard Cubic Feet Minute (SCFM)	cubic feet per minute x compression ratio	$\text{CFM} \times \text{CR} = \text{SCFM}$
Cylinder Air Consumption (SCFM)		$\frac{\text{Volume of Cylinder} \times \text{Cycle Rate}}{\text{Cycle Time} \times 28.8}$
OR		
Cylinder Air Consumption (SCFM)		$\frac{\text{CR} \times \text{Volume} \times \text{Cycles Per Minute (x2 if double acting)}}{1728}$
CPM Maximum Number of Cycles w/ Air Supply		$\frac{\text{SCFM} \times 1728}{\text{CR} \times \text{Volume (x2 if double acting)}}$
Cycle Time per Stroke		$\frac{\text{Volume (retract, extend or both)} \times \text{CR}}{\text{SCFM} \times 28.8}$
Average Velocity F/M (feet per minute)		$\frac{\text{Stroke} \times 5}{\text{Extend Time} + \text{Retract Time} + \text{Dwell Time}}$
Average CFM		$\frac{\text{Area} \times \text{F/M (feet per minute)}}{144}$
Cv (when P2 is less than 10% of P1)	$\frac{\text{SCFM}}{22.7} \times$	$\frac{\text{F (temp)} + 460}{\sqrt{(P1 + 14.7) - (P2 + 14.7) \times (P2 + 14.7)}}$
Cv (when P2 is 10-25% greater than P1)	$\frac{\text{SCFM}}{22.7} \times$	$\frac{\text{F (temp)} + 460}{\sqrt{(P1 + 14.7) - (P2 + 14.7) \times \frac{(P1 + 14.7 + P2 + 14.7)}{2}}}$
Time Compressor Can Maintain Set Pressure (T)		$\frac{\text{Cubic Feet} \times (P1 - P2)}{14.7 \times \text{SCFM}}$
Receiver Volume to meet demands before recharging		$\frac{T \times 14.7 \times \text{SCFM}}{(P1 - P2)}$
Compressor Output (CFM)		